Power Wave® 455M Robotic & Power Wave® 455M/STT Robotic

NEXTWELD™

The Next Generation . . .

The Power Wave 455M Robotic is a high performance, digitally controlled inverter power source designed for robotic, hard automation and semiautomatic applications. It is designed to be part of a modular, multi-process welding system that can be arranged in a variety of ways for optimum, customized performance and easy maintenance. Optional DeviceNet™ and Ethernet communication modules provide networking capabilities and allow the power sources to communicate with other industrial machines to create a highly integrated and flexible welding cell. Available as a standard model or with Lincoln's STT® process for applications in which heat input control, minimal distortion, reduced spatter and low fumes are essential.

Processes

MIG Pulsed STT Flux-Cored

Advantage Lincoln

- Program your own waveform or choose from over 60 standard welding waveform programs that offer a broad range of electrode size, type and shielding gas combinations to give you optimal appearance, penetration, beadshape and travel speed for each application.
- Modular design enables robotic, hard automation and semiautomatic applications using a single machine platform.
- Optional communication modules provide networking capabilities via DeviceNet or Ethernet.
- Utilizes ArcLink™ - the leading digital communication protocol for welding, making it the best choice for seamless, time critical integration to the power source and networked equipment.
- Software based controls can be upgraded as new features become available.
- Process and production monitoring with access to real time (500Hz) feedback such as arc current, voltage and wire feed speed. Access to internal data acquisition (10KHz) and access to real time machine status such as fault/alarm conditions and arc time.
- A Power Wave inverter operates at a high efficiency (88-90%) with a 95% minimum power factor(1) and is capable of operating from a universal input voltage (208 to 575 volts).
- Power Wave 455M/STT features Lincoln's Surface Tension Transfer® Process, which controls heat input for great penetration and reduced spatter and fumes.

Description

Output CC CV DC Input 3 PHASE 50/60 Hz

Recommended General Options

DeviceNet Interface Module, Ethernet Interface Module, Analog Interface Module, Wave Designer™ Software, Dual Cylinder Platform Undercarriage, CoolArc® 40 Water Cooler

Recommended Wire Feeder

Power Feed 10R

Order

K2262-1 Power Wave 455M Robotic
K2263-1 Power Wave 455M/STT Robotic

Call the Lincoln Electric Automation Division at 216.383.2667 for more information.

TECHNICAL SPECIFICATIONS

Product Name	Product Number	Input Voltage	Rated Output Current/Voltage/Duty Cycle	Input current @Rated Output	Output Range	Dimensions H x W x D in. (mm)	Net Weight lbs. (kg)
Power Wave 455M Robotic	K2262-1	208/230/460/575/3/50/60	60Hz: 450A/38V/100% (570A/43V/60%)	60Hz: 58/53/25/22A (82/78/37/31A)	5-570A	26.1 x 19.9 x 32.9 (663 x 505 x 835)	286 (130)
Power Wave 455M/STT Robotic	K2263-1		50Hz: 400A/36V/100% (500A/40V/60%)	50Hz: 49/45/23/18A (67/61/31/25A)			293 (133)

(1) At rated output.

LINCOLN® ELECTRIC
THE WELDING EXPERTS

PERFORMANCE

- The Power Waves contains a large library of welding programs or "weld modes." Each weld mode is a specific software program that defines the output characteristics of the power source for simple processes like Stick and TIG to more complex processes like Synergic MIG (GMAW) and Pulsed MIG (GMAW-P). Weld modes were developed to handle a broad range of applications. They may be tuned to a specific electrode type, electrode diameter, gas type or application.
- All Power Waves share a common digital control platform to maximize interoperability, interchangeability and compatible software tools.

Nextweld

Lincoln's Power Wave power sources are equipped with Nextweld innovations that offer seamless system integration, high efficiency and reliability, and outstanding arc control. Here are just a few of Nextweld's technologies and processes that are standard with this machine.

- Waveform Control Technology™ controls and shapes the output waveform. Optimizes metal transfer to reduce spatter and improve stability. Simplifies process selection and controls heat input.
- Surface Tension Transfer (STT)[1] is a Waveform Control process that uses current controls to adjust the heat independent of wire feed speed, provides low heat input without overheating or burning through. Distortion, spatter and smoke are reduced.
- The Power Wave 455 features Ethernet and DeviceNet compatibility, as well as ArcLink, the leading communication protocol for welding and the best choice for seamless, time critical integration to the power source and networked equipment.
- Power Wave Robotic Welding Systems feature weld mode selection, PRE-FLOW, RUN-IN, ARC CONTROL, BURNBACK, POST-FLOW and CRATER that provide the operators full control over the welding procedure and sequence.
- Synergic welding eliminates the need to independently set the wire feed speed and voltage. Synergic welding automatically sets both voltage and pulse characteristics based on the wire feed speed.

WHAT IS NEXTWELD™?

NEXTWELD™

Nextweld incorporates Lincoln's technologies, processes and products to create a technologically advanced arc welding platform. Waveform Control Technology™, power electronics and digital communications provide the foundation for Nextweld innovations, including Surface Tension Transfer®, Pulse-On-Pulse™, CT Chopper Technology™, ArcLink™ and many more. Try Nextweld products for ultimate arc control, high efficiency/reliability, and seamless system integration.

- State-of-the-Art Inverter technology provides high power efficiency, excellent welding performance and a lightweight, compact design. Rigorous environmental, mechanical and weld testing ensures ruggedness and reliability.

FEATURES

- When connected to Fanuc robot, welding software is accessible via the Robot's teach pendant or a computer via the RS232 serial port.
- Welding software is upgradable via the RS232 serial port or via a network using the optional Ethernet module.
- Add, customize or replace Lincoln updated welding waveforms for every application using a laptop and Lincoln's Wave Designer Software.

Robot Teach Pendant

- Select from over 60 standard welding procedures in the power source library from the robot's Teach Pendant.
- Search by process and wire type.
- Full access to all power source details, including: control loop gains, machine calibration, arc statistics, unfiltered feedback signals.
- Access to power source diagnostic such as fault/alarm status/details.
- ArcLink is a leading digital communications protocol for sharing information between intelligent components in an arc welding system.
- Individual status light for each system component.
- Simple, reliable input voltage changeover.
- Auto device recognition simplifies accessory cable connections.
- Individual status light for each system component.
- DeviceNet or Ethernet modules can be field installed.

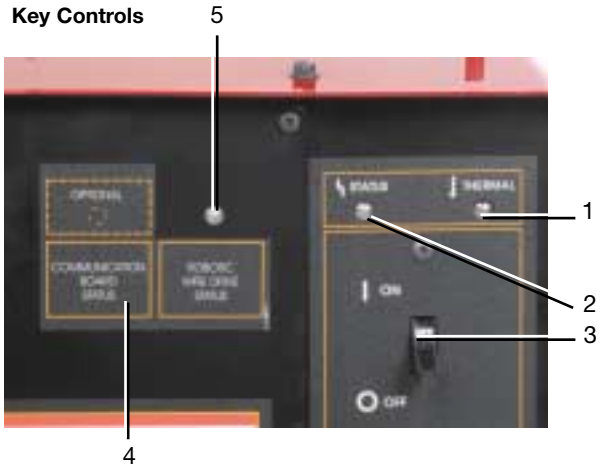
FANUC Robot Teach Pendant

Welding Software

(1) Power Wave 455M/STT only

A CLOSER LOOK

Key Controls

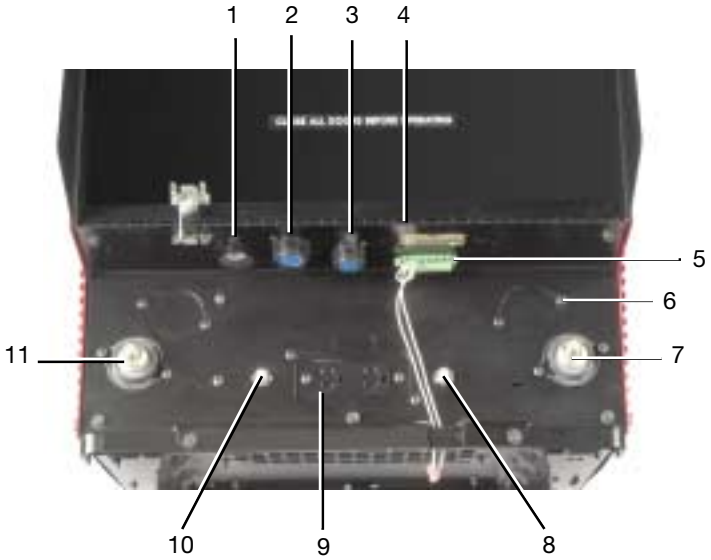


Power Wave 455M Robotic and 455M/STT Robotic Front Panel.

1. Thermal Light
2. Power Supply Status Light
3. On/Off Switch
4. Optional Communication Module Status Light (DeviceNet or Ethernet)
5. Feeder Status Light

Power Wave 455M Robotic and 455M/STT Robotic Front Panel.

1. Communication Interface Module - DeviceNet or Ethernet/DeviceNet upgrades can be field installed.



Front Lower Panel

1. Devicenet or Ethernet/DeviceNet Receptacle (optional)
2. ArcLink Receptacle
3. Work Sense Lead Receptacle
4. RS-232 Diagnostic Receptacle
5. External Input Connector
6. STT Stud (not shown)
7. Positive Output Stud
8. CB1 (10A) 40VDC
9. 115VAC Receptacle
10. CB1 (10A) 40VDC
11. Negative Output Stud

QUALITY AND RELIABILITY

Design

Safety, reliability and service-ability are built into Lincoln's Inverter design.

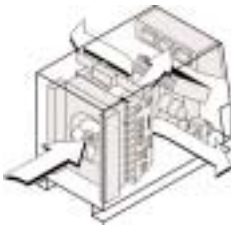
- Open construction for preventative maintenance and diagnostics.
- Thermostatically protected.
- Electronic output over-current protection and electronic input over-voltage protection.
- Operating Temperature Range: -20C to +40C.
- Storage Temperature Range: -40C to +40C.
- Double insulation and varnish on main transformer.
- Shielded Heavy Duty Input Contactor in tightly sealed environmental enclosure.
- Electrical connections coated with insulating compound for long term reliability in harsh environments.
- Automotive grade sleeves protect leads from abrasion.
- Tough PC Boards - tray mounted, completely encapsulated, double locked harness connectors, environmentally protected connectors, electrical silicone grease, high current rating.
- Efficient Cooling System with Industrial Motor with sealed bearings and metal fan blade.
- Fan-As-Needed - reduces power consumption and the amount of debris that gets drawn into the machine by shutting the fan down when it is not needed.

Open Construction

Coated Electrical Connections

Automotive Grade Sleeves

Trayed and Potted PC Board



Cooling System

Testing and Reliability

All Lincoln inverters are fully tested for reliability before and after assembly.

- Each machine undergoes a functional weld test to ensure performance.
- Lincoln inverters are operated in an environmental chamber under extreme conditions of temperature and humidity.
- Mechanical testing including vibration and drop testing is performed
- Extensive temperature testing is performed to ensure that all components are running within allowable range.
- Three year warranty on parts and labor.
- Manufactured under a quality system certified to ISO 9001 requirements.
- Designed to the IECEN 60974-1 standard.
- Standards - IECEN 60974-1, NEMA EW 3, CSANRTL/C.
- Environmental rating IP21S.

Environmental Chamber

Manufacturing & Testing

WHAT IS POWER ELECTRONICS?

NEXTWELD™

Power electronics innovations like lightweight inverters and high speed chopper are common, but Nextweld's power electronics provide fabricators with a highly efficient system that are reliable and can adapt easily to new operations. State-of-the-Art Inverter technology provides high power efficiency, excellent welding performance and a lightweight, compact design. Lincoln inverters undergo rigorous environmental, mechanical and weld testing in the design/production process to ensure ruggedness and reliability.

INTERFACE OPTIONS

ArcLink

- ArcLink is a digital communication protocol designed specifically for the arc welding industry. It integrates welding systems and networked components to create a flexible welding cell.
- ArcLink is a Controlled Area Network (CAN) based network with a 40V supply.
- ArcLink is used to connect the welding equipment such as the power supply and wire feeder together where reliable, priority-based operation is essential.

ArcLink Cable Connector

DeviceNet

- DeviceNet is a network that provides connections between simple industrial devices (such as sensors and actuators) and higher-level devices (Programmable Logic Controllers [PLC]). The Power Waves can be interfaced with DeviceNet using a K2206-1 DeviceNet interface module.

DeviceNet Cables

ArcLink ETHERNET

- Data is transmitted through wide area network (10 baseT, IEEE 802.3 Compliant). Monitor/control all equipment from a single interfaced desktop computer. The Power Waves can be interfaced with Ethernet using a K2207-1 Ethernet/DeviceNet Interface Module.
- Also includes full DeviceNet capability.

Ethernet Cables

Hard Automation - DeviceNet

- Standardized PLC connections enable engineers to connect welding systems to other automation devices. Sample application templates make it easy to implement typical control features. The Power Waves require a K2206-1 or K2207-1 Interface Module.

Allen-Bradley Panelview 600

Serial

- All Lincoln digital equipment is configured with a serial interface.
- All software services are accessible for maintenance.
- RS-232 serial interfaces are inexpensive and easy to use and understand.

RS-232 Cable

RS-232 Port on the front lower panel of the machine.

Analog

- This module provides Analog and Discrete Inputs/Outputs (I/O) for trigger controls plus feedbacks.

Analog Interface

WHAT IS DIGITAL COMMUNICATIONS?

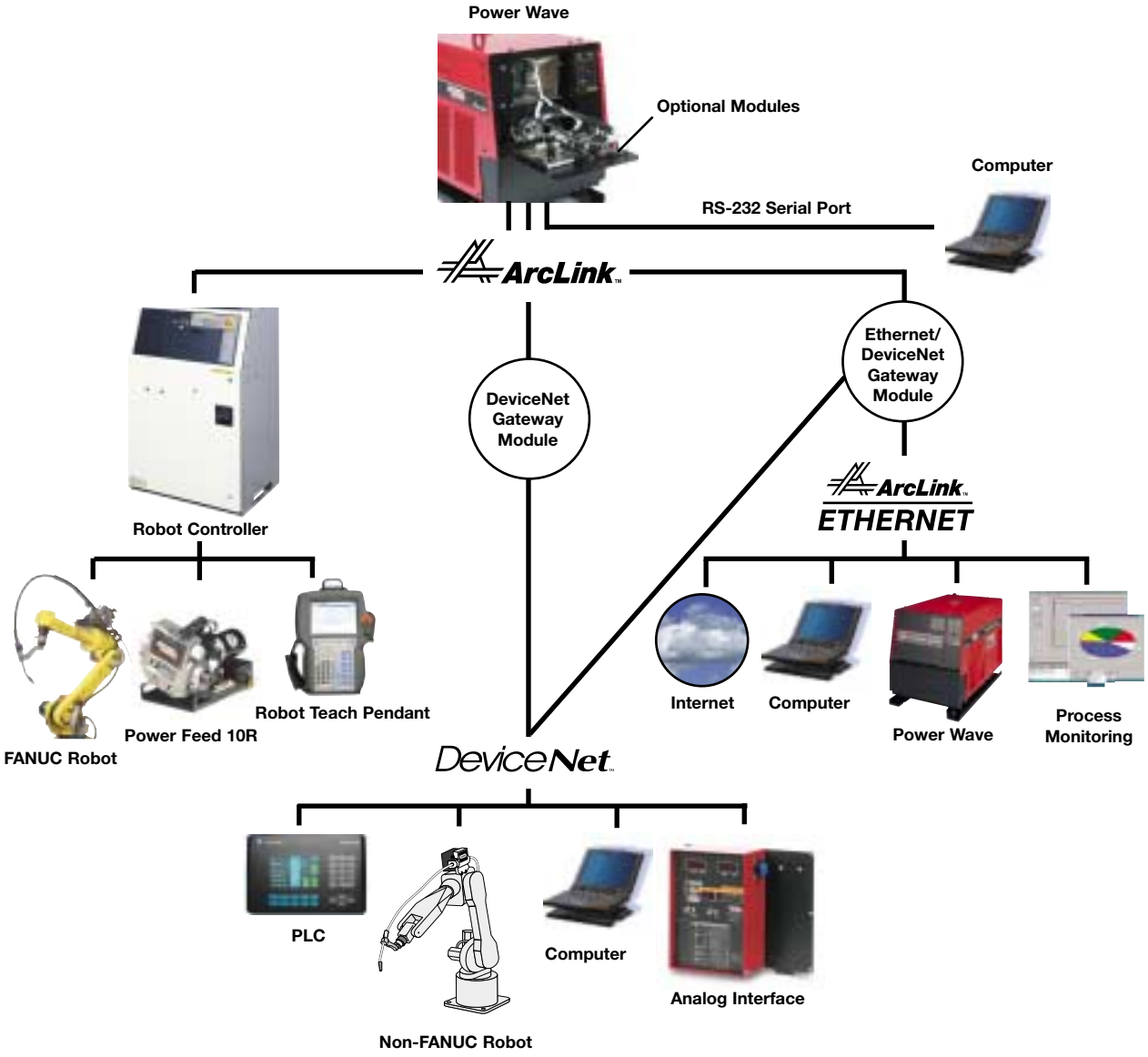
NEXTWELD™

Nextweld's digital communications offers fabricators a fast, reliable, inexpensive way to integrate and operate equipment. Large amounts of data transmit reliably and accurately, and wiring costs are relatively low, especially when the number of devices on the network increase.

Seamless Integration

Power Wave power sources are compatible with Ethernet and DeviceNet systems for seamless integration and efficiency.

ArcLink allows welding systems and networked equipment to communicate with each other for high speed data transfer and full integration of systems.



GENERAL OPTIONS

DeviceNet Interface Module
This module provides Networking capabilities for Output Control, Weld Settings, Weld Mode Selection and Data Logging.
Order K2206-1

Ethernet/DeviceNet Interface Module
This module provides all DeviceNet functionality, networking capabilities for Weld Development, Data Logging, Systems Updates, Diagnostics, Weld Settings and Weld Mode Selection.
Order K2207-1

Analog Interface Module
This module provides Analogs and Discrete Inputs/Outputs (I/O) for trigger controls plus feedbacks.
Contact Lincoln Automation at 216.383.2667 for information.

Wave Designer Software
This software allows you to program your own waveforms. Custom parameters include PEAK and BACKGROUND CURRENT, FREQUENCY, PULSE WIDTHS and others.
Contact Lincoln Automation at 216.383.2667 for information.

GENERAL OPTIONS CONT.

Dual Cylinder Platform Undercarriage
Platform undercarriage for mounting two gas cylinders at rear of welder.
Order K1570-1

Cool Arc 40 Water Cooler
Energy-efficient long life cooler for water-cooled welding applications.
Order K1813-1 for 115V
Order K2187-1 for 230V

WIRE FEEDER OPTION

Power Feed 10R
The Power Feed 10R is a high performance, digitally controlled wire feeder designed to be a part of a modular, multi-process welding system. It is specifically designed to mount to a robot arm or to use in hard automation applications.
Order K1780-2

POWER WAVE 455M ROBOTIC & POWER WAVE 455M/STT ROBOTIC ORDER FORM

PRODUCT DESCRIPTION	ORDER NUMBER	QUANTITY	PRICE
POWER WAVE 455M ROBOTIC	**K2262-1**		
POWER WAVE 455M/STT ROBOTIC	**K2263-1**		
RECOMMENDED GENERAL OPTIONS			
DeviceNet Interface Module	K2206-1		
Ethernet Interface Module	K2207-1		
Analog Interface Module	Contact Lincoln Automation at 216.383.2667		
Wave Designer Software	Contact Lincoln Automation at 216.383.2667		
Dual Cylinder Platform Undercarriage	K1570-1		
Cool Arc® 40 Water Cooler - 115V	K1813-1		
Cool Arc® 40 Water Cooler - 230V	K2187-1		
RECOMMENDED WIRE FEEDER			
Power Feed 10R	K1780-2		
	TOTAL:		